Sales Data Analysis Report

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# USING PANDAS FUNCTION

Dataset: SalesData.csv

## Problem 1 - Total number of orders

Code:

total\_orders = df['Order\_ID'].nunique()

Output:

Total Number of Orders: 11

## Problem 2 - Total sales amount

Code:

total\_sales = df['Sales'].sum()

Output:

Total Sales Amount: ₹7,343.30

## Problem 3 - Average discount across all orders

Code:

average\_discount = df['Discount'].mean()

Output:

Average Discount: 10.00%

## Problem 4 - Total profit made

Code:

total\_profit = df['Profit'].sum()

Output:

Total Profit: ₹1,357.74

## Problem 5 - Average sales per order

Code:

average\_sales\_per\_order = df.groupby('Order\_ID')['Sales'].sum().mean()

Output:

Average Sales per Order: ₹667.57

## Problem 6 - Top 5 selling products by sales amount

Code:

top\_5\_products = df.groupby('Product')['Sales'].sum().sort\_values(ascending=False).head(5)

Output:

Top 5 Selling Products:  
  
Samsung Galaxy Tab - ₹1,999.99  
  
Apple iPhone 8 - ₹1,239.96  
  
Sharpie Highlighters - ₹957.58  
  
Logitech Wireless Mouse - ₹731.94  
  
Herman Miller Ergonomic Chair - ₹699.99

## Problem 7 - Product with highest quantity sold

Code:

most\_sold\_product = df.groupby('Product')['Quantity'].sum().idxmax()

Output:

Product with Highest Quantity Sold: Acco Paper Clips

## Problem 8 - Month with highest total sales

Code:

month\_highest\_sales = df.groupby(df['Order\_Date'].dt.month)['Sales'].sum().idxmax()

Output:

Month with Highest Sales: November

## Problem 9 - Region generating highest profit

Code:

region\_highest\_profit = df.groupby('Region')['Profit'].sum().idxmax()

Output:

Region Generating Highest Profit: East

## Problem 10 - Correlation between discount and profit

Code:

correlation\_discount\_profit = df[['Discount', 'Profit']].corr()

Output:

Correlation:  
  
Discount vs Profit: -0.539

## Problem 11 - Average profit per region

Code:

average\_profit\_region = df.groupby('Region')['Profit'].mean()

Output:

Average Profit per Region:  
  
Central: ₹94.59  
  
East: ₹276.86  
  
South: ₹2.50  
  
West: ₹110.97

## Problem 12 - Customers with purchases above ₹50,000

Code:

high\_value\_customers = df.groupby('Customer\_ID')['Sales'].sum()[df.groupby('Customer\_ID')['Sales'].sum() > 50000]

Output:

No customers above ₹50,000

## Problem 13 - Percentage of orders where discount was applied

Code:

discount\_orders\_percentage = (df[df['Discount'] > 0].shape[0] / df.shape[0]) \* 100

Output:

Percentage of Orders with Discount: 63.64%

## Problem 14 - Top 3 categories contributing most to profit

Code:

top\_3\_categories = df.groupby('Category')['Profit'].sum().sort\_values(ascending=False).head(3)

Output:

Top Categories:  
  
Technology  
  
Furniture  
  
Office Supplies

## Problem 15 - Orders where sales were made but profit was negative

Code:

negative\_profit\_sales = df[(df['Sales'] > 0) & (df['Profit'] < 0)]

Output:

2 records found (Negative Profits)

## Problem 16 - Total quantity sold per region

Code:

quantity\_per\_region = df.groupby('Region')['Quantity'].sum()

Output:

Quantities:  
  
Central: 11  
  
East: 5  
  
South: 7  
  
West: 7

## Problem 17 - Number of unique products sold

Code:

unique\_products = df['Product'].nunique()

Output:

Unique Products Sold: 11

## Problem 18 - Create new column 'Profit\_Percentage' and display top 5

Code:

df['Profit\_Percentage'] = (df['Profit'] / df['Sales']) \* 100  
sorted\_df = df.sort\_values('Profit\_Percentage', ascending=False).head(5)

Output:

Top 5 Profit Percentage:  
  
Samsung Galaxy Tab  
  
Bose QuietComfort 35  
  
Apple iPhone 8  
  
Logitech Wireless Mouse  
  
Herman Miller Ergonomic Chair

## Problem 19 - Customers who purchased from multiple regions

Code:

multi\_region\_customers = df.groupby('Customer\_ID')['Region'].nunique()[df.groupby('Customer\_ID')['Region'].nunique() > 1]

Output:

Customers from multiple regions: 0

## Problem 20 - Standard deviation of sales

Code:

sales\_std\_dev = df['Sales'].std()

Output:

Standard Deviation of Sales: ₹624.08